TWO SPECIES OF *HOMOLOPHUS* NEWLY FOUND FROM HOKKAIDO, JAPAN (ARACHNIDA: OPILIONES: PHALANGIIDAE)

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Synopsis

TSURUSAKI, Nobuo (Zoological Institute, Faculty of Science, Hokkaido University, Sapporo 060, Japan): Two species of *Homolophus* newly found from Hokkaido, Japan (Arachnida: Opiliones: Phalangiidae). *Acta arachnol.*, **35**: 97-107 (1987).

Homolophus arcticus BANKS and *H. rishiri* n. sp. are described from specimens collected from northern Hokkaido, Japan. This is the first record for the former species from Japan. *Homolophus rishiri* n. sp. is known from Is. Rishiri, off the northernmost part of Hokkaido, and is clearly distinguishable from *H. arcticus* by its small and darkly colored body and by the shape of the penis.

As a companion paper to that of COKENDOLPHER (1987), in which the identity of the genus *Homolophus* is discussed, I will redescribe here, the type species of the genus, *Homolophus arcticus* BANKS, based on specimens newly discovered from northern Hokkaido, Japan. In addition, a new species of the genus from Is. Rishiri, off the northernmost part of Hokkaido, will be described.

Terminology for the anatomy of the genitalia follows that of COKENDOLPHER (1985). Unless otherwise stated, specimens are in my personal collection. Specimens to be deposited in the Zoological Institute, Faculty of Science, Hokkaido University, are listed ZIHU.

Homolophus arcticus BANKS, 1893

(Figs. 1A-B, 2A-D, 3A-F, 4A-E, 5)

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Homolophus arcticus BANKS, 1893, p. 208 (Type: male, Commander Island=Komandorskiye Is., U.S.S.R., in U.S. National Museum of Natural History, not examined, but see COKENDOLPHER, 1987); STRAND, 1906, p. 474; ROEWER, 1923, p. 881; STAREGA, 1978, p. 209; COKENDOLPHER, 1985, p. 399; 1987, p. 91.

Opilio sachaliensis SUZUKI, 1941, p. 245, figs. 8-13; 1956, p. 97, figs. 1-7.

Opilio kurilus ROEWER, 1956, p. 289, figs. 131-133 (Types: male holotype and one male and three female paratypes—not 3♂2♀ as in original designation, Sakhalin, in SMF, RII/2829, examined).

Opilio sachalinus ROEWER, 1956, p. 295, figs. 153-155 (Type: male, Kurilen, in SMF, RII/5889, examined).

Euphalangium albofasciatum: STAREGA, 1964, p. 399 (in part); GRITSENKO, 1979a, p.

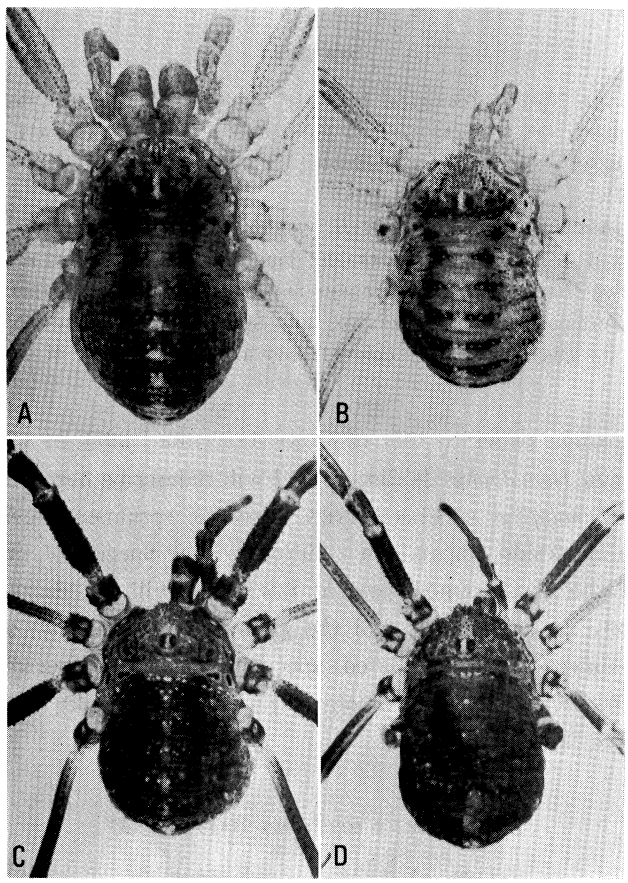

Fig. 1. *Homolophus arcticus* BANKS (A-B) and *H. rishiri* n. sp. (C-D). Dorsal view of body. A, C (holotype): male. B, D: female. (not to scale)

130, fig. 16; 1979b, p. 38, fig. 36; SUZUKI and TSURUSAKI, 1983, p. 204.
Egaenus zichyi: STAREGA, 1978, p. 222 (in part).

Description (Wakasakanai ex.). *Male*: Body from above as in Fig. 1A; dorsum with numerous sharp-pointed tubercles. Ocular tubercle, relatively low, nearly as long as wide; not canaliculate above, with some black-tipped tubercles (Fig. 2A, C). Scent gland pores visible from above, somewhat elongated, length slightly less than diameter of eye. Thoracic and abdominal tergites, each with a transverse row of black-tipped tubercles. Coxae smooth. Genital operculum as in Fig. 3A, with scattered hairs. Supracheliceral lamellae not developed.

Chelicera (Fig. 3B) swollen and stout, without a ventral spine on basal joint. Basal joint dorsally with black-tipped denticles; distal joint dorsally with scattered denticles.

Palp (Fig. 3D) short and robust; trochanter distally with several tubercles; femur ventrally and dorsally with numerous sharp-pointed tubercles; patella swollen distally, dorsally with numerous tubercles; tibia with numerous scattered tubercles, especially dense ventrally; tarsus ventrally with dense rows of tubercles which extend to proximal two-thirds, tarsal claw smooth.

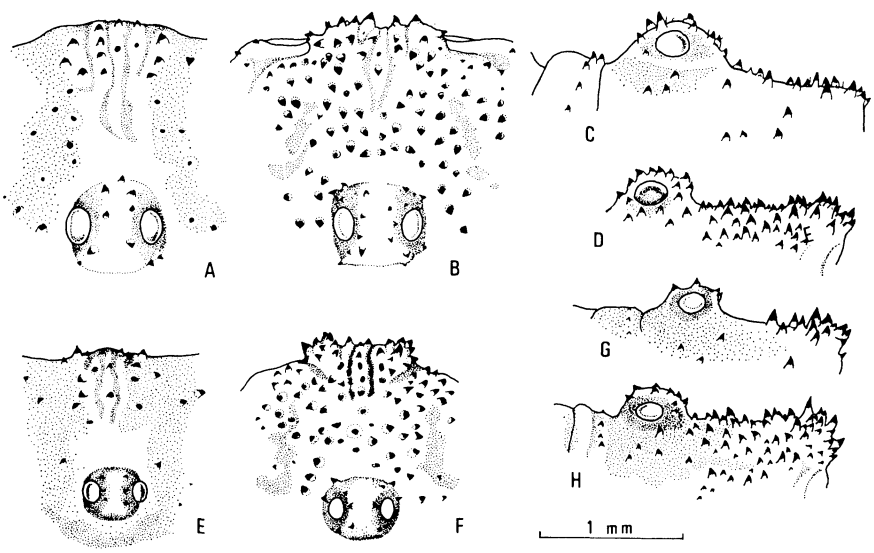

Fig. 2. *Homolophus arcticus* BANKS (A-D) and *H. rishiri* n. sp. (E-H). Dorsal (A-B, E-F) and lateral (C-D, G-H) views of anterior portion of carapace. A, C, E, G: male (E, G: holotype). B, D, F, H: female.

Legs relatively short and robust; each segment slightly pentagonal or hexagonal in cross section, each edge with a row of sharp pointed tubercles or bristles; trochanter to tibia thick, especially so in legs I (Fig. 3F) and III.

Coloration: Ground color above whitish yellow, with light brown spots and splotches, below whitish yellow. Eye tubercle above pale; darkened around eyes. Maculation pattern as shown in Fig. 1A. Abdominal tergites III-VI with a medial row of whitish yellow spots. Chelicera, palps and legs, whitish yellow with light brown splotches.

Penis (Fig. 4A-D) shaft 3.6 mm long, 0.56 mm wide at base; glans 0.46 mm long, stylus 0.12 mm long. Shaft dorsoventrally flattened, dorsally moderately curved and with a weak swelling at distal one-fifth (Fig. 4B, arrow); basal half contains a muscle with a tendon extending to the base of the glans. Glans: Dorsal surface somewhat concaved (Fig. 4C-D); ventrally with a carina; distally truncated in lateral view (Fig. 4C).

Female: Form and coloration essentially as in males, but, as noted in SUZUKI (1956), the armament of preocular area of the carapace is far more prominent in female than in male (compare Fig. 1A and B; Fig. 2A, C and B, D). Palp (Fig. 3E) relatively slender, without denticles on tarsus; other segments also with considerably fewer denticles than those of males. Chelicera (Fig. 3C) relatively small, basal joint disto-dorsally with a few denticles. Ovipositor consisting of three furcal joints and 40 rings, with 1-2 slit sensilla per side on second furcal joint. Seminal receptacles, located within 1st or 2nd ovipositor ring, as in Fig. 4E, elongated rod-shaped.

Juveniles: Similar to adult female, except tubercles or denticles on dorsum undeveloped. Legs without denticles except for some on distal ends of femora, patellae, and tibiae; hairs only.

Measurements (in mm: ♂♂, n=5; ♀ in parentheses). Body length: 7.7-8 7 (6.9). Cephalothorax: 2.8-3.0 (2.7) length; 4.4-4.9 (4.0) width. Abdomen width: 4.6-5.6 (4.1). Palp lengths: femur, 1.46-1.57 (1.10); patella, 1.18-1.22 (0.82); tibia, 1.19-1.28 (0.81); tarsus, 1.92-2.01 (1.72). Leg lengths: femur I, 3.4-3.6 (2.7); femur II, 5.1-5.5 (4.5).

Distribution. U. S. S. R.: Komandorskiye Is.; Far East region (Amur to Primorskii); Sakhalin; Kuril Islands (Is. Kunashir and Is. Iturup). North Korea. Japan: the northernmost part of Hokkaido (Wakasakanai). (Fig. 5)

As stated by COKENDOLPHER (1987), differences between this species and *Homolophus albofasciatus* (KULCZYŃSKI) from Mongolia and *Egaenus zichyi*

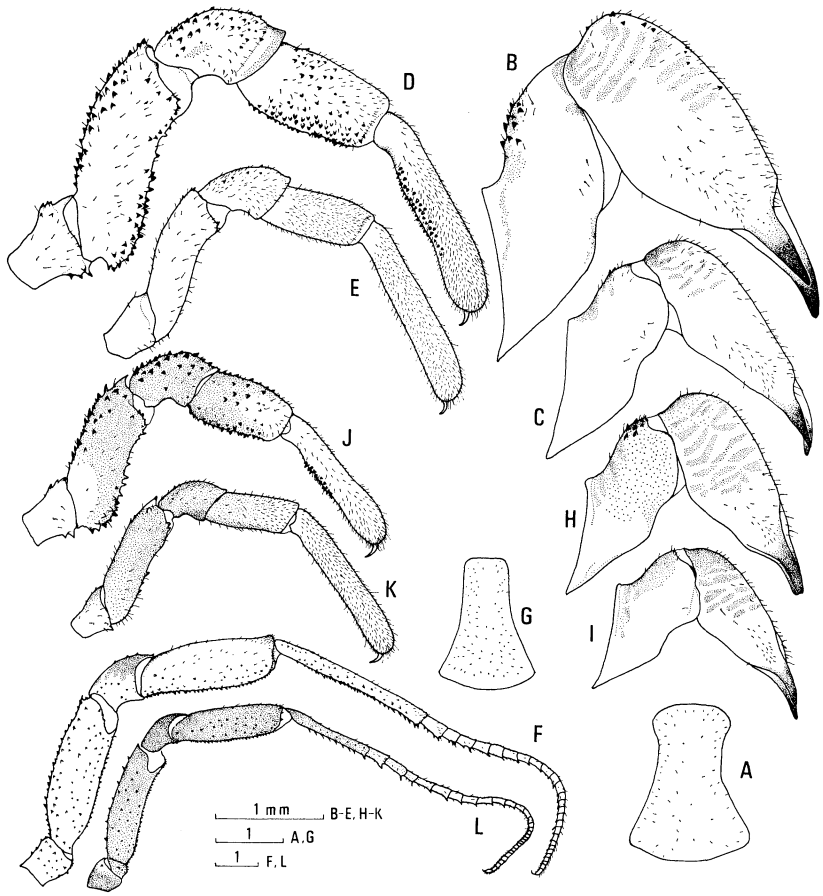

Fig. 3. *Homolophus arcticus* BANKS (A-F) and *H. rishiri* n. sp. (G-L). A, G: Genital operculum of male. B-C, H-I: Mesal view of left chelicera (B, H: male. C, I: female). D-E, J-K: Mesal view of left palp (D, J: male. E, K: female). F, L: Lateral view of right first leg of male. (G, H, J, L: holotype).

KULCZYŃSKI are unfortunately still unclear. Here, both the records of "*Euphalangium albofasciatum*" from the Far East region of U. S. S. R. by GRITSENKO (1979a) and from North Korea by STAREGA (1964) were tentatively regarded as those of *H. arcticus* taking the resemblance of penis shape illustrated in GRITSENKO (1979a, fig. 16) and geographical proximity of these areas into consideration.

Biology. Present materials from Wakasakanai, Hokkaido, were found at the base of tufts of the grass, *Carex macrocephala* WILD, and under lumber on

coastal sand dunes near human habitation.

Remarks. There is considerable variation in sizes for specimens from different localities. Body length and femur I length in Wakasakanai specimens are nearly equal to those in the materials from southern Sakhalin reported by SUZUKI (1941, 1956).

Opilio sachalinus ROEWER and *O. kurilus* ROEWER were first synonymized with *Euphalangium albofasciatum* by STAREGA (1964). Of these, *O. kurilus* is apparently conspecific with *Homolophus arcticus*. On the other hand, there are some doubts left for the synonymy of *O. sachalinus* with *H. arcticus*, because the male holotype of *O. sachalinus*, allegedly collected from Sakhalin, is considerably smaller in size (body length, 3.9 mm; femur I length, 2.3 mm: these values are smaller than those of the following species, *H. rishiri*) than the specimens of *H. arcticus* from southern Sakhalin described by SUZUKI (1941, 1956). Unfortunately I could not examine the penis of the type specimen of *O. sachalinus*, since it was already removed from the body and apparently lost, the vial contained no pieces of the penis. However, I would like to regard also this specimen as *H. arcticus* according to the treatment by STAREGA (1964).

For the details of other synonymy of this species, see COKENDOLPHER (1987).

Specimens examined. Hokkaido: Teshio-gun, Toyotomi-chô, Wakasakanai, under lumber and tufts of grass (*Carex macrocephala* WILD) on coastal sand dune, ca. 5 m alt., ca. 20 m from the coastal line, 2♂24juv., 6-VIII-1985, N. TSURUSAKI coll.; same site, 3♂1♀ (1♂1♀: ZIHU-375) 16juv. (Of these, 10 juveniles comprised by 3♂7♀ were dissected for chromosome observation. Details of the results will be reported elsewhere.), 9-VIII-1985, N. TSURUSAKI coll.

Homolophus rishiri n. sp.

(Figs. 1C-D, 2E-H, 3G-L, 4F-I, 5)

Phalangiinae sp.: TSURUSAKI, 1985, p. 64, fig. 6H (juvenile).
Homolophus sp.: COKENDOLPHER, 1987, p. 93.

Diagnosis. This species is similar to *H. arcticus*, redescribed above, in essential structure, but clearly separable from the latter by its smaller size and prominently dark colored body and legs. The form of penis, lacking a dorsal swelling of the shaft, also serves to separate this species from *H. arcticus*.

Description. Male: Of the form as shown in Fig. 1C. Supracheliceral

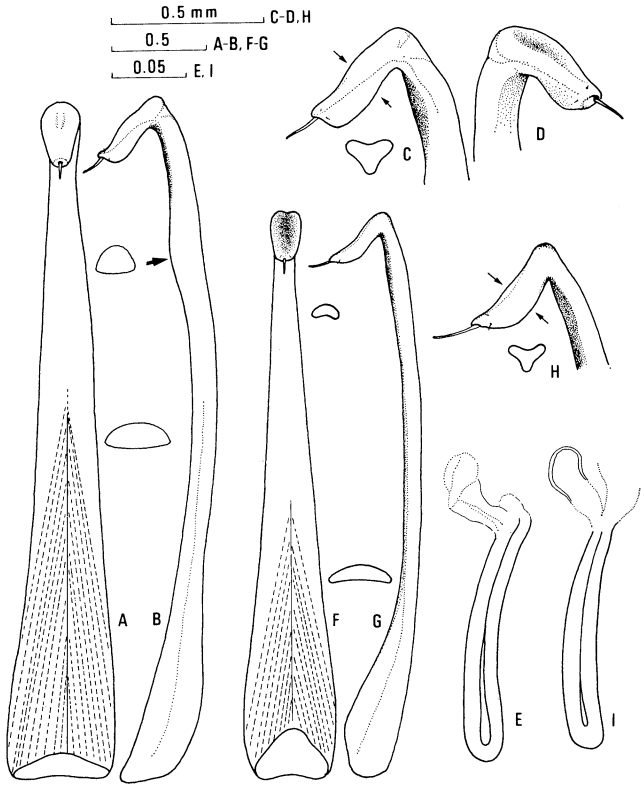

Fig. 4. *Homolophus arcticus* BANKS (A–E) and *H. rishiri* n. sp. (F–I). A–B, F–G (holotype) : Dorsal (A, F) and lateral (B, G) views of penis. C–D, H (holotype) : Lateral (C, H) and dorso-lateral (D) views of distal portion of penis. E, I : Seminal receptacle.

lamellae very low, not visible from above. Preocular area of carapace with a mound consisted of several black-tipped denticles (Fig. 2E, G). Ocular tubercle slightly canaliculate above; each carina with three denticles. Thoracic tergites I, II, and abdominal tergites I–IV, each with a transverse row of black-tipped denticles encompassed by creamy white rings. Coxae I–IV unarmed, smooth, with scattered hairs only. Genital operculum as in Fig. 3G, with sparse hairs only.

Chelicera (Fig. 3H) rather short and robust; basal joint disto-dorsally with several denticles; distal joint with only sparse hairs.

Palp (Fig. 3J) rather short and thick; trochanter disto-dorsally and disto-

ventrally with some tubercles; femur dorsally and ventrally with numerous well-developed tubercles and sparse black bristles; patella distally thickened, dorsally with numerous tubercles; tibia swollen, widest at proximal one-third, with many tubercles and black bristles on all sides, especially dense ventrally; tarsus hairy, ventrally with dense rows of dark-colored denticles, which extend from proximal one-fourth to a half, claw smooth.

Legs relatively short; femora to tibiae thickened, especially so in legs I and III. Each segment round or slightly pentagonal or hexagonal in cross section. Femora, patellae, and tibiae with many denticles, especially dense on ventral surfaces of femora and tibiae of first legs (Fig. 3L).

Coloration: Body ground color yellowish brown; with many dark brown specks and splotches. Eye tubercle above light yellowish brown, with dark-colored eye rings. Chelicera dark brown; both lateral sides of distal joint with conspicuous blackish brown tabby splotches (Fig. 3H). Legs dark to blackish brown; metatarsi and tarsi slightly lighter.

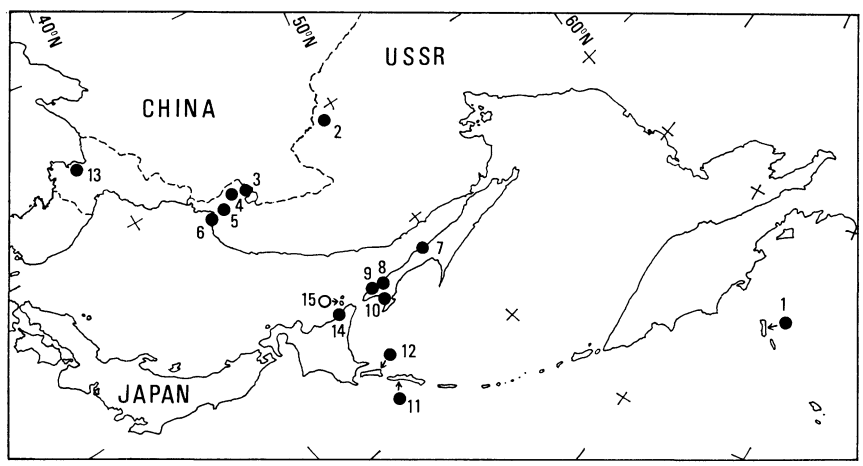

Fig. 5. Distribution of *Homolophus arcticus* BANKS (solid circle) and *H. rishiri* n. sp. (open circle). 1, Komandorskiye Is. (from BANKS, 1893). 2, Arkhara; 3, Novokachalinsk; 4, Reshetnikovo; 5, Ussuriysk; 6, Vladivostok (2-6 from GRITSENKO, 1979a: I could not locate Anisimovka on a map of the Primorskii Region, which was reported in that paper). 7, Uglegorsk (=Esutoru); 8, Kholmsk (=Maoka); 9, Nevel'sk (=Honto); 10, Korsakov (=Ôtomari); 11, Mt, Hitokapp, Is. Iturup; 12, Rurui, Is. Kunashir (5-12 from SUZUKI, 1941 and 1956). 13, Phenian (=Prov. Pyongan North and South?), North Korea (from STAREGA, 1964). 14, Wakasakanai, Hokkaido. 15, Mt. Rishiri, Is. Rishiri.

Penis (Fig. 4F-H) (measurements: n=2). Similar to that of *H. arcticus* in essential features. Shaft 3.02-3.11 mm long, dorsoventrally flattened, widest at near base (0.47-0.49 mm wide), continuously narrower distally. Glans, 0.35-0.39 mm long, 0.14-0.17 mm wide at widest portion; dorsal side of glans prominently concave, underside convex and forming a ridge. Stylus 0.14-0.15 mm long.

Female: Form and coloration as in males, except chelicera, legs I, III, and palpi not enlarged (Fig. 1D). Armament of the preocular mound of carapace well developed (Fig. 2F, H). Chelicera (Fig. 3I) lacks dorsal denticles on basal joint. Armament of palp weak, with some tubercles on dorsal and ventral surfaces of trochanter and femur and on dorsal of patella (Fig. 3K). Ovipositor consists of three furcal joints and 33 rings, with 1-2 slit sensilla per side on second furcal joint. Each segment strongly pigmented with dense dark brown chromatophores. Seminal receptacles, as in Fig. 4I, located within 1st to 3rd ovipositor rings, with a putative lateral basal pouch (structure of conjugate part not visible in the slide mounted with Hoyer's medium because of striking pigmentation of segments).

Juveniles: Similar to adult female but with less-developed tubercles on the dorsum and with somewhat paler coloration (cf. TSURUSAKI, 1985, fig. 6H). Legs without tubercles except for some minute ones on distal ends of femora, patellae, tibiae.

Measurements (in mm: ♂♂, n=2, holotype italicized; ♀ in parentheses). Body length: 4.3-*5.5* (5.9). Cephalothorax: 1.5-*2.0* (2.2) length, 2.5-*3.7* (3.5) width. Abdomen width: 3.1-*3.9* (3.7). Palp lengths: femur, 0.94-*1.15* (0.93); patella, 0.64-*0.80* (0.67); tibia, 0.74-*1.18* (0.69); tarsus, 1.28-*1.41* (1.48). Leg lengths: femur I, 2.7-*2.7* (2.6); femur II, *4.2*-4.5 (4.2).

Length of legs of holotype (♂):

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
I	2.7	1.4	2.3	3.0	5.7	15.1
II	4.2	1.3	3.7	3.5	10.5	23.2
III	2.6	1.1	2.2	3.4	6.0	15.3
IV	3.9	1.3	2.8	5.1	8.5	21.6

Distribution. So far known from ca. 250-1200 m elevation of Mt. Rishiri, Is. Rishiri, off northern Hokkaido (Fig. 5).

Biology. The present specimens were found on the canopies of low shrubs,

beneath the forest litter, or on the bare ground of a narrow climing path to the top of Mt. Rishiri (Oshidomari route). Collection records suggest that this species matures in early to mid August. Although I visited Mt. Rishiri on 11-12 September 1984, to collect adults of this species, I failed to find any specimens; suggesting the shortness of active season of the adults.

Etymology. The specific epithet is a noun in apposition.

Specimens examined. Hokkaido: Is. Rishiri, Mt. Rishiri, Oshidomari route: 670-1000 m alt., 2♂ (holotype and paratype), 1♀ (paratype), 3 juv. (1♂+2♀: dissected for chromosome observation; results to appear elsewhere), 8-VIII-1985, (holotype: ZIHU-376/paratypes and 3 juveniles: ZIHU-377); same locality: ca. 250 m alt., 1 juv., 8-VII-1984; ca. 400-1200 m alt., 4 juv., 9-VII-1984. All specimens were collected by N. TSURUSAKI.

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摘　　要

鶴崎展巨*（北海道大学理学部動物学教室：〒060 札幌市北区北10条西8丁目）：北海道より新たに発見された *Homolophus*（ウデブトザトウムシ）属の2種（クモ形綱：ザトウムシ目：マザトウムシ科）。

北海道北部より得られた標本に基づき，日本新記録種 *Homolophus arcticus* BANKS（ウデブトザトウムシ）と新種 *H. rishiri*（リシリウデブトザトウムシ）を記載した。後者はその小型かつ黒褐色の体と陰茎の形により前種とは明瞭に区別できる。

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